

JUSTIFICATION OF

ULTRASOUND REQUESTS



RECOMMENDED BEST PRACTICE GUIDELINES ADAPTED BY YORK AND SCARBOROUGH TEACHING HOSPITALS NHS FOUNDATION TRUST

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**BMUS BEST PRACTICE REFERRAL GUIDELINES**

**JUSTIFICATION OF ULTRASOUND REQUESTS**

**Introduction**

## These guidelines are for general practice referrals and exclusive of the Rapid Diagnostic Service (RDS) which are under development in England.

This document is intended to support referrers to Ultrasound (US) and ultrasound providers in the appropriate selection of patients for whom ultrasound would be beneficial in terms of diagnosis and or disease management. Whilst the document is primarily directed at primary care, the guidance may be relevant for other referrer groups. It has been written to aid ultrasound providers in justifying that an ultrasound examination is the best test to answer the clinical question posed by the referral.

Referral management is crucial as we find new ways of working which minimize infection control risks following a global pandemic situation. This guidance aims to provide clear pathways to ensure the best use of ultrasound imaging facilities whilst keeping patients and staff safe.

The document has been compiled by a panel of ultrasound experts with a pragmatic approach to managing referrals. The intention is to support good practice in vetting and justifying referrals for US examinations. Making best use of resources is essential for sound financial management and good patient care.

This document can be used to assist and underpin local guidelines.

NICE guidance (NG12, Suspected Cancer: Recognition and Referral) published in June 2015 has also been considered in the production of this updated publication. In many instances NICE advise urgent direct access CT but if this is unavailable, they advise that patients are referred for an urgent ultrasound examination. Local practice should dictate appropriate pathways, following consideration of capacity and demand.

This document has been revised by the York and Scarborough Teaching Hospitals NHS Foundation Trust clinical Ultrasound leads to reflect local best practice.

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**Section 1 –** **General Requesting Principles**

Ultrasound (US) can be very useful as a first line investigation. It is typically non-invasive and does not involve ionising radiation. However, a significant number of requests are received where ultrasound is very unlikely to be helpful; this prolongs waiting times for all and can even delay some patients from being referred for a more appropriate test, thereby delaying their diagnosis.

To support the radiologist/advanced practitioner perform an optimal examination, it would be helpful to include the following details when appropriate.

* Presenting symptoms
* Requests must include a **specific clinical question**(s) to answer
* Findings on clinical examination
* Results of relevant investigations
* Relevant past medical history
* Differential diagnosis

Many US examinations are now performed by advanced practitioner in ultrasound and not doctors. Suspected diagnosis must be clearly stated, not implied by vague, non-specific terms such as ‘pain query cause’ or ‘? Pathology’ etc.

Although US is an excellent imaging modality for a wide range of abdominal diseases, there are many for which US is not an appropriate first line test (e.g. suspected occult malignancy)

Given sufficient clinical information we will re-direct US requests to CT or MR if this is the more appropriate modality. The referrer will be notified.

If a ultrasound request has been rejected and you have a specific question relating to the referral, please email [yhs-tr-Ultrasound.BMUSReferralGuidance@nhs.net](mailto:yhs-tr-Ultrasound.BMUSReferralGuidance@nhs.net) .

This is not an ‘advice and guidance’ inbox and questions from GP’s should be directly relate to a specific referral for a patient.

Please understand that our aim is to make the best use of the resource available to us to provide the best outcome for your patient and not hinder good quality care for others.

This document has been compiled by advanced practitioners, radiologists and clinicians to support good practice in vetting and justifying referrals for ultrasound examinations. This guidance is based on clinical experience supported by peer reviewed guidance from the [British Medical Ultrasound Society](https://www.bmus.org/static/uploads/resources/Justification_of_Ultrasound_Requests_v4_nQyeaNI.pdf).

**Requests that are inappropriate or do not meet these agreed guidelines will be returned with appropriate advice and guidance.**

**The following referral examples address the more common requests and are not intended to be exhaustive*.***

**Section 2 –** **General Abdominal US**

| **ABDOMEN** | | |
| --- | --- | --- |
| **Clinical Details** | **US scan is Justified** | **US scan is NOT justified** |
| Abnormal/Altered LFTs  *USS is an essential part of every abnormal LFT pathway. Used to:*  *• Identify causes*  *• Establish severity*  *However, LFT abnormality should be severe or persistent prior to imaging* | * Raised bilirubin + other LFT abnormality requires urgent USS (obstruction or significant disease likely) * If LFT (any enzyme) persistently high (2 or more occasions) * If LFT persistently high, despite lifestyle changes * Abnormal LFTS + one or more of the following: * Pain * Jaundice * Two or more abnormal LFT enzyme results (single or multiple episodes) * For isolated rise in Alk Phos, confirmed as liver source by GP (US is indicated to evaluate biliary ducts). | * If request only states this with no specific detail. * A single episode of mild – moderate elevation of a single enzyme does not justify an US scan. An isolated and mild-moderate rise in ALT should be rechecked in the first instance, and only investigated if it remains abnormal. * For isolated rise in Alk Phos, the GP needs to confirm liver origin before proceeding with any further investigation (doing either GGT or isoenzymes to exclude bony source). If it is liver origin, US is indicated to evaluate biliary ducts. * Isolated rises in GGT do not require further investigation. Should not trigger referral for USS. |
| Raised ALT (other LFTs normal)  *Typically the range for normal ALT between 7 to 56 units per litre. Mild elevations are generally considered to be 2-3 times higher than the normal range* | * Persistently raised ALT (2 or more occasions) and / or despite following weight loss and altered lifestyle guidance, and/or change in medication * Justified in pts with persistently raised ALT (3-6 months) and no other risk factors * ALT >200 on a single test   (ALT does not correlate well with extent of liver damage, but in general v. high ALT is seen in things like autoimmune liver disease, where LFT fluctuate a lot and may revert to normal whilst still being "active").   * ALT </= 200 AND with high risk factor(s) (DM (poorly controlled), obesity, statins & other medications which affect the liver) | US is not justified for a single episode of raised ALT </= 200 with no high risk factors ((DM, obesity, statins & other medications which affect the liver) |
| Jaundice/painless Jaundice/Suspected pancreatic cancer | Bilirubin levels of <150 require urgent ultrasound and referral to the 2WW hepatobiliary outpatient jaundice clinic | * Bilirubin levels of > 150 require immediate referral to acute surgery. Imaging should not be requested via primary care. Appropriate imaging will be undertaken in secondary care. * If painless Jaundice/suspected pancreatic cancer refer for an urgent CT scan and referral to the 2WW hepatobiliary outpatient clinic |
| Abdominal Pain (as the only clinical detail given) | A specific clinical question derived from the patient history and clinical examination is acceptable | Generalised/localised pain as the only symptom does not a justify an US. Further information is required on the request. |
| Palpable Upper abdominal mass |  | CT request is more appropriate, discuss with a radiologist |
| Suspected gallbladder disease | Pain plus consistent history and/or dyspepsia |  |
| Gallbladder polyp | Advice for rescan and follow up will be given in the ultrasound report for polyps <10mm. | * Any polyp (greater than or equal to) ≥10 mm should be referred for a surgical opinion. * If patient becomes symptomatic thought to be biliary related within the year they should be referred for a surgical opinion, regardless of size of the polyp * Polyps with overt signs of malignancy refer to surgical team under fast-track cancer pathway. |
| Abdominal Bloating/ Abdominal distension  *(Female – see Gynaecology section)*  *(Male – See Non-specific symptoms)* | Suspicion of ascites - Usually due to liver or heart failure or malignancy. Likely cause should be indicated on request. | * Bloating as the only symptom * High Suspicion of malignancy/cancer – CT scan is more appropriate |
| Altered bowel habit/Diverticular disease |  | * US does not have a role in the management of Irritable Bowel Syndrome. * Referrals for Inflammatory Bowel Disease, acute presentations of diverticular disease etc. should be made via secondary care referral. * Where bowel cancer is suspected the patient should be referred via the 2 week wait cancer pathway for appropriate investigations and imaging. |
| Diabetes - known |  | US does not have a role in the management of **well controlled** diabetes. Up to 70% of patients with Diabetes Mellitus have a fatty liver with raised ALT. This does not justify a scan. |
| Blunt abdominal trauma, suspect abdominal injury post fall |  | * Patients with suspected intra-abdominal injury need clinical assessment by the trauma team in ED * Ultrasound does not have a role in trauma outside of immediate triage FAST scanning in an ED setting. * Intra-abdominal injury post trauma cannot be excluded with a high degree of confidence. Haematoma and laceration can be missed, particularly in the acute phase. * Imaging with US in the non-acute phase after trauma can be misleading and small lacerations cannot be excluded with confidence |
| Non site specific/vague symptoms |  | Patients with non-site specific symptoms should be referred to Rapid Diagnostic Centre.  Examples:   * Vague abdominal pain * Gradual unexplained weight loss * anaemia * chronic reflux * altered blood tests * bloating * vague fullness * New onset diarrhoea and/or constipation   If uncertain please seek opinion via Ultrasound advice and guidance  to   [yhs-tr-Ultrasound.BMUSReferralGuidance@nhs.net](mailto:yhs-tr-Ultrasound.BMUSReferralGuidance@nhs.net) |

**Section 3 –** **Renal Tract, Kidney, Ureter & Bladder (KUB)**

| **RENAL TRACT** | | |
| --- | --- | --- |
| **Clinical details** | **US scan is justified** | **US scan is NOT justified** |
| Urinary Tract Infection | * Recurrent (> 3 episodes in 12 months) with no underlying risk factors * Non-responders to antibiotics, frequent re-infections * H/O stone or obstruction | US is not justified if first episode. Please re-refer if becomes recurrent (>3 episodes in 12 months) with no underlying risk factor. |
| Hypertension | Renal tract to assess for renal disease/obstructive uropathy and exclude large adrenal mass (although if adrenal disease suspected clinically CT is more appropriate) | Routine Doppler imaging not indicated as of limited diagnostic accuracy |
| Haematuria (visible and non-visible) |  | No direct referral from primary care for US in patients with visible or non-visible haematuria. Please refer to the One Stop haematuria Clinic in Malton.  ***Exceptions that might be considered on case-by-case basis include:***   * Haematuria (visible) with low haemoglobin and unexplained vaginal discharge in women >55 in whom US of urinary tract and pelvis would be appropriate to exclude endometrial cancer * Haematuria associated with UTIs (unexplained and recurrent or persistent), in those >60 who have recently had negative investigations in One Stop Clinic and symptoms have recurred |
| Suspected Renal Colic | Suspicion of stone disease in male or female of any age but no acute pain or haematuria | * Patients of any age with suspected renal colic suffering acute pain and/or haematuria. Refer for urgent CT KUB * If treatment of stones is being considered pre procedure CT KUB usually required, though likely to be secondary care referral * In York/Scarborough Trust follow up of known stones is by a tailored approach determined by urology depending on age/frequency of imaging and visibility on plain film and will use a mixture of CT/US/XR. |

**Section 4 –** **Gynaecological US**

| **GYNAECOLOGY** | | |
| --- | --- | --- |
| **Clinical details** | **US scan is justified** | **US scan is NOT justified** |
| “Scan to assess cervix” | Where a cervical polyp is clinically visualised, an US scan can be carried out to assess for endometrial polyps. | These referrals should be rejected as ultrasound is not used in the primary diagnosis of occult cervical pathology. |
| Follow-up of benign lesions in pre-menopausal patients  *e.g. Fibroids, Dermoid cysts, simple cysts, haemorrhagic cysts, endometrioma* | * If the patient has undergone a **clinical change**, then re-scan is acceptable * If secondary care have advised repeating USS | There is no routine role for US for follow-up or in treatment monitoring if the lesion has been characterised as a benign ovarian/uterine lesion. If management advice needed on benign lesions, seek advice and guidance from gynaecology. |
| Follow-up of benign lesions in post-menopausal patients | Asymptomatic women, with simple, unilateral, unilocular ovarian cysts, (<5cm) in diameter have a low risk of malignancy. In the presence of normal serum CA 125 levels, these cysts can be managed conservatively and will be advised on the ultrasound report. |  |
| Abnormal PV Bleeding (Pre and peri-menopausal patients)  *The majority of pre-menopausal bleeding problems will be dysfunctional and standard treatment options should be offered prior to scans being undertaken*. | * Need to specify symptoms i.e. investigation of intermenstrual bleeding or menorrhagia or suspicion of fibroids. * Treatment options have failed – this is to be stated on the referral | * No information on the referral other than abnormal PV bleeding * No evidence of failed treatment options |
| Prolonged unexplained oligomenorrhoea or secondary amenorrhoea | US to assess endometrial thickness is appropriate if oligomenorrhoea has been > 3 months or secondary amenorrhoea has been > 6 months | If oligomenorrhoea has been < 3 months or secondary amenorrhoea < 6 months referrals are not accepted. This must be stated on the referral. |
| Primary amenorrhoea  *(Defined as: Absence of menses and secondary sexual characteristics by age 14 or absence of menses with normal secondary sexual characteristics by age 16)* | Normal prolactin and TSH results | Abnormal prolactin and TSH. Refer patient to endocrinology. |
| IUCD or Mirena intrauterine system | * US to assess presence of fibroids if placement of Mirena or IUCD is considered * US to investigate presence of Mirena or IUCD when threads not seen. | If patient is pregnant with Mirena or IUCD refer to Early Pregnancy Unit |
| PID | Ultrasound may be helpful if an abscess or hydrosalpinx is suspected. These requests are however usually more appropriate via secondary care referrals. Patients with suspected PID referrals will be accepted if symptoms persist following treatment. | There is no role for ultrasound in management of suspected pelvic inflammatory disease.  Pelvic swabs are more appropriate. |
| Dysmenorrhoea | If smear and STI swabs are normal, but pelvic examination reveals an enlarged uterus. | US is not justified if pelvic examination/smear test and STI swabs are normal. |
| Pelvic Pain | In patients > 50 the likelihood of pathology is increased. The request may be accepted, **provided a specific clinical question is posed.**  In any patient, any age, pelvic pain + one or more of the following then US is justified:   * Palpable mass   + Raised Ca125 - The Ca125 result must be on the request   + Raised CRP or WCC   + Nausea/Vomiting   + Menstrual Irregularities   + Dyspareunia >6 weeks duration   Suspected endometriosis, pelvic pain + one or more of the following then US is justified:   * + Cyclical pain (often but not always)   + Pain the week before and after a period   + Dysmenorrhoea   + Dyschezia * Dyspareunia | US is unlikely to contribute to patient management if pain is the only symptom, in patients <50.  Pelvic pain & one or more of the following:   * H/O Ovarian Cyst * H/O PCOS * Severe’ or ‘Sudden’ pain – Isolated and short duration * Rule out or ?appendicitis, ovarian cyst, anything else   These do not represent further clinical  symptoms. Request should be returned.  Vague symptoms, or requests for purposes of reassurance will be returned pending more clinical information/clinical history/examination findings to justify US scan |
| Menorrhagia | * Endometrial polyps are suspected * Palpable uterus * Pelvic mass * Failed pharmaceutical treatment after 3 months | * Normal size uterus * No pelvic mass * Pharmaceutical treatment not investigated |
| Post coital bleeding/intermenstrual bleeding/persistent vaginal discharge | If pelvic examination, smears and swabs are completed and normal. | * If pelvic examination has not been completed. * If smear/HVS & STI swabs have not been completed. |
| Bloating | A **specific clinical question** is required.  Persistent or frequent bloating occurring over 12 times in 1 month, in women especially over 50 and/or  • with a palpable mass.  • with raised Ca125 - ***The Ca125 result must be on the request*** | * Bloating as an isolated symptom is not accepted. * Intermittent bloating is not acceptable. |
| PMB | * Women with PMB who have had a gynaecology history review and vaginal examination. * Repeat PMB more than 6 months since previous investigations | * Previous hysterectomy- reject advising GP to refer to gynaecology * < 12 months since previous LMP – reject advising GP to refer to gynaecology * Mirena/IUCD in situ or very recently removed, as the endometrium cannot be reliably assessed for pathological appearances. * Patients on HRT – must be stopped and scan done after 6 weeks * Previous PMB and normal scan but with repeat bleed less than 6 months since previous investigation * Women receiving Tamoxifen - scanning for endometrial thickness in patients who are taking Tamoxifen is unreliable and **referral for hysteroscopy** is recommended instead. |
| PCOS | If referral from Gynaecology clinic investigating infertility.  If positive clinical symptoms and inconclusive or negative biochemistry\*, an ultrasound may be useful – this information should be included in the referral not just ’? PCOS’  \*Biochemistry includes Testosterone, SHBG, free Androgen index (NOT LH/FSH) | GP referral:  Diagnosis of PCOS should be based on:   * Irregular menses * Clinical symptoms and signs of hyperandrogenism such as acne, hirsutism. * Biochemical evidence of hyperandrogenism with a raised free androgen index (the testosterone is often at the upper limit of normal) * Biochemical exclusion of other confounding conditions   Ultrasound should not be used for the diagnosis of PCOS in those with a gynaecological age of less than 8 years (< 8 yrs after menarche) due to the high incidence of multifollicular ovaries in this life stage. |

**Section 5 –** **Superficial Structures**

| **SUPERFICIAL STRUCTURES** | | |
| --- | --- | --- |
| **Clinical details** | **US scan is justified** | **US scan is NOT justified** |
| Soft tissue lump | If clinical findings are equivocal and diagnosis is essential to management, requests will be considered on case-by-case basis.  Imaging is first line for investigation of suspected sarcomas or soft tissue lesions meeting the criteria below.  If ANY of the following are present, **request urgent imaging (USS/MRI)** at York & Scarborough Teaching Hospitals FT. The radiologist will decide on the best imaging for the patient.   * All lesions > 5cm * Any size when deep or fixed/tethered to muscle or fascia. * Rapid increase in size e.g. doubling in size of small lesions over a short period of time * Symptoms e.g. significant pain (not just pressure related) * Site of previous resection (for lipoma or sarcoma) as recurrence is an indication for urgent imaging and usually excision. * Larger lipomata, approaching 10cm, or those of any size that feel ‘fixed’ and could be deep.   If there is any diagnostic uncertainty, do **not** refer patients for imaging elsewhere e.g., Yorkshire Health Solutions as this can lead to further delay or diagnostic uncertainty, requiring repeat ultrasounds and inappropriate referrals for MRI at York & Scarborough Teaching Hospitals Trust  **NB Suspected soft tissue sarcoma in children and young people**   * **Children** with suspected malignant masses are an exception to the above. * The **Paediatricians** ask that these patients be referred **urgently** to them prior to imaging. | **Most soft tissue lumps are benign**. With classical clinical signs of a benign lump and a reassuring clinical history i.e. present for a while, **no** rapid increase in size or change in clinical features - US is **not** routinely required for diagnosis   * **Lipomata** are usually rubbery and mobile, and you can pinch the overlying skin. If < 5cm, mobile, non-tender with no significant growth over 3 months US **not** required for diagnosis. * **Sebaceous cysts** are usually firm but fluctuant, mobile over deep tissues but attached to skin which cannot be pinched over the lesion. There may be slight skin discolouration and if there is an obvious punctum the diagnosis is not in doubt. US should **not** be necessary for diagnosis. * **Ganglia** can feel quite firm but are often fluctuant with a history of changing in size. Usually periarticular or related to tendons. US should **not** be necessary for diagnosis.   US is **not** required for diagnosis in cases of classical features of:   * Dupytren’s, plantar fibromatosis, * mobile nodules at the SI joint level * generalized lipomatosis at the nape of the neck. * calf muscle hernias |

**Section 6 –** **Lymph Nodes**

| **LYMPH NODES** | | |
| --- | --- | --- |
| **Clinical details** | **US is justified** | **US is NOT justified** |
| Small <1cm, mobile and tender/non tender |  | US is **not** indicated for small, palpable, subcentimetre mobile lymph node(s) in an otherwise healthy child/young adult.  The patient must be physically examined by clinician prior to referral. Referral is **not** acceptable following telephone or video consultation only. Check for nodes elsewhere in the neck, axilla, groin, liver, spleen. Manage according to these findings.  Patients with clinically benign groin, axillary or neck lymphadenopathy do not benefit from US. Small nodes in the groin, neck or axillae are commonly palpable. Pea-sized or subcentimetre lumps are commonly felt in the posterior triangles, especially in children.  **Reassure patient. Small mobile nodes can persist indefinitely and be normal.** |
| Tender/Intermittent swelling 1-2cm | For nodes < 2cm, US is ONLY indicated if progressively enlarging, non tender and persistent (>6 weeks) unless known malignancy, especially melanoma.  Ensure prior history of malignancy is mentioned on the request form. Radiologist may decide another imaging investigation ie CT is more appropriate. | If lymph nodes are new, tender and a **source of sepsis is evident**, Ultrasound is **NOT** required. If overlying erythema and possibility of abscess formation, make urgent clinical referral.  Intermittent swelling is usually due to reactive nodes. The presence of tenderness and intermittent swelling points to inflammatory/infective causes of lymphadenopathy rather than malignancy.  Examine all nodal sites nodes and consider viral screen/Monospot test if generalised and haematological or malignant cause unlikely. |
| Persistent swelling, >2cm, for  > 6 weeks or malignancy known or suspected | If malignancy is suspected US may be appropriate.  Signs of malignancy include:   * Increasing size * Painless fixed mass * Rubbery consistency   See site specific advice below:  Where there is a palpable or visible nodal mass >2cm with Red Flag signs and concern about malignancy appropriate imaging and / or referral will depend upon the site of the node and nature of suspected primary.   * Firm lumps >2cm in the neck: * **For Adults:** Use 2WW referral to ENT or MaxFax as clinically appropriate. They will organise the US if thought necessary from the referral details. * **For Children:** please contact the Paediatric Consultant of the week via switchboard and they will arrange for the child to be reviewed.   Axillary firm lumps / enlarged lymph nodes in **female** patients:  This will be dependent on local policy and +/- any other accompanying signs and symptoms. **Referral to breast care unit** as a first line investigation is often the required pathway  Axillary firm lumps / enlarged lymph nodes in **male** patients:  Ultrasound may be used to assess the morphology of axillary lymph nodes however where there are highly suspicious features of malignancy, **Chest X-Ray is required** as a first line investigation. Ultrasound +/- USG biopsy **after advice and guidance discussion with Haematology/Oncology as appropriate.**  Firm > 2cm Groin lymph nodes where malignancy is suspected:  Ultrasound +/- USG biopsy **after advice and guidance discussion with Haematology/Oncology as appropriate.** | Clinical referral may be more appropriate with US or other imaging investigation decided by secondary care specialist or MDT discussion. |

**Section 7 –** **Groin and Scrotal US**

| **GROIN AND SCROTUM** | | |
| --- | --- | --- |
| **Clinical details** | **US scan is justified** | **US scan is NOT justified** |
| Groin nodes | *See section 6 on lymph node imaging* |  |
| Hernia |  | * US is **not** required if characteristic history and examination findings of reducible palpable swelling or cough impulse. * GP referrals should be directed to **surgical assessment.** * Irreducible and/or tender swelling suggest incarcerated hernia and require **urgent surgical referral**. * If groin pain present, clinical assessment should consider MSK causes and refer accordingly. **US is not usually helpful in these situations.** |
| Scrotal mass | * Any patient with a swelling or mass in the body of the testis should be referred urgently. * If clinical doubt, or the testicle cannot be palpated separate to the mass then US is warranted. |  |
| Scrotal pain | * Where the clinical diagnosis is unclear US may influence management. * Acute pain, in the absence of suspected torsion or acute epidiymo-orchitis * To evaluate suspected complications of epidiymo-orchitis e.g. abscess or when pain and symptoms persist despite antibiotic treatment. * Following traumatic injury to assess viability of testis, haematoma etc. Urology input recommended. | * Suspected **torsion** requires **urgent urological referral** which should **not** be delayed by imaging. * Uncomplicated epidiymo-orchitis * Chronic varicocele, uncomplicated hydrocele and epididymal cysts providing that the clinical examination is unequivocal in identifying that the mass is extra testicular. |

**Section 8 -** **Head and Neck US**

| **HEAD AND NECK** | | |
| --- | --- | --- |
| **Clinical details** | **US is justified** | **US is NOT justified** |
| ***NECK DISCOMFORT/PAIN & SWELLING*** | | |
| Posterior and Lateral Neck Pain |  | US is not indicated for assessment of musculoskeletal neck pain. Referral to community MSK if required. |
| TMJ pain/clicking |  | US not indicated. Advise TMJ rest – avoid wide opening and chewing gum; soft diet; analgesia. If persistent (>3 months) refer to general dental practitioner or Max fax. |
| Skin Lesion and Lesions attached to skin |  | US has **NO ROLE** in the diagnosis of small lesions of cutaneous appendages and dermatological lesions. If clinical concern, refer to Dermatology, initially via Advice and Guidance with attached photos. |
| Lymph nodes | Where there is a palpable or visible neck lump with Red Flag signs and concern about malignancy  US justified when requested by Secondary Care. **Use 2WW referral** to ENT or MaxFax as clinically appropriate. They will organise the US if thought necessary from the referral details. | * Palpable small mobile lymph node or nodes in a **child or young adult who is otherwise healthy**:   Patient needs to be **physically examined** by clinician prior to referral. A good clinician checks for nodes elsewhere... in the neck, axilla, groin, liver, spleen. Manage according to these findings.  US not indicated. Reassure patient. Small mobile nodes can persist indefinitely and be simply normal palpable lymph nodes (pea-sized lumps) are commonly felt in the posterior triangles.   * Palpable or visible swelling with signs of local sepsis:   Treat with antibiotics. If around the jaw, consider dental assessment and dental radiographs as appropriate. Consider referral to Dentist or MaxFax. |
| Salivary swelling | * Mealtime swelling:   Requires ultrasound (ideally with sialogogue).   * Persistent salivary swelling:   US cannot reliably differentiate benign from malignant lesions. US and a MaxFax referral is required |  |
| Swelling behind angle of Mandible | * Unilateral persistent swelling:   Threshold for scanning swelling behind mandible should be low as it may be due to parotid tumour, lymph node or branchial cyst.   * Bilateral intermittent swelling:   Intermittent swelling is usually due to reactive nodes.  US is **ONLY** indicated via **2WW pathway** if persistent (>6 weeks) or progressively enlarging.  The presence of tenderness and intermittent swelling points to inflammatory/infective causes of cervical lymphadenopathy rather than malignancy. Examination of the axillae and groin nodes and consideration of a viral panel/Monospot test should be considered. |  |
| Facial and cheek swelling | Post Prandial swelling:  US (ideally with sialogogue) is recommended. |  |
| Intraoral Swelling |  | Intraoral swelling, white patch or ulceration that persists for >6 weeks requires Maxfax referral. |
| Sternoclavicular joint swelling |  | This is usually due to osteoarthritis and is more pronounced on the dominant handed side. US has little role in the diagnosis.  If thought to be an inflammatory arthropathy, refer to rheumatology. |
| ***THYROID*** | | |
| Hyperthyroidism |  | Refer to Endocrinologist.  US is **not** first line but used with nuclear medicine (only via specialist referral). [See RCP guidelines](https://www.rcplondon.ac.uk/guidelines-policy/thyroid-disease-assessment-and-management-nice-guideline) |
| Hypothyroidism |  | US Imaging is **not** indicated.  If palpable lump refer via **2WW Pathway to ENT** |
| Hyperparathyroidism and hypercalcaemia |  | Hypercalcaemia with detectable or raised PTH is most commonly caused by primary hyperparathyroidism but there are other possible causes. Formal assessment by an endocrinologist is recommended.  Imaging is only indicated in patients who have biochemically proven PRIMARY hyperparathyroidism as part of a localisation procedure IF they are surgical candidates. (i.e. only via specialist referral) |
| Thyroid Swelling | * Sudden onset thyroid swelling especially if <40 years old:   This is usually due to haemorrhage into a benign thyroid nodule or cyst. Routine US can confirm diagnosis.   * Rapidly enlarging swelling especially if >40 years old:   Patients >40 years should be referred for an **urgent** US by the GP. Thyroid nodules are common especially in females >50 years. The vast majority will be benign. US can categorise these using the British Thyroid Association criteria (e.g.BTA U3 and above will require tissue sampling). Radiology will make clear in the report if onward referral to the thyroid MDT is required.   * New thyroid swelling +/- palpable enlarged lymph nodes:   If any Red flag signs (hard swelling, palpable nodes, family history, childhood radiation exposure) refer to thyroid clinic under **2WW pathway**   * Gradually increasing thyroid swelling:   This is usually due to a benign goitre but a small proportion could have a malignant nodule.  It is the natural history of benign nodules to grow over time so if the patient has previously had a thyroid US showing benign nodules it may be appropriate to observe clinically. | Gradually increasing thyroid swelling:  If there is a concern for compressive symptoms, an ENT referral would be more appropriate. |
| ***THROAT*** | | |
| Globus (sensation of lump in throat) |  | Globus is usually a benign symptom. US is not helpful.  If symptoms are troublesome & persistent (> 6 weeks), referral to ENT should be considered. |
| Throat discomfort |  | Most throat pain is transient and resolves spontaneously. US is not helpful.  Persistent discomfort (>6 weeks) requires ENT referral. |
| Dysphagia  (True difficulty in swallowing) |  | Dysphagia is a **RED FLAG** symptom and US generally not indicated.  Refer to ENT for High dysphagia and UGI for Low dysphagia under **2WW pathway** |
| Hoarse Voice | Enlarged palpable thyroid nodule.  If thyroid cancer suspected, specialist referral to thyroid clinic, under **2WW pathway**.  If longstanding goitre, routine ultrasound referral | No definite thyroid enlargement  US is NOT indicated. Refer patient to ENT. Unexplained and persisting hoarseness for >6 weeks is an indication for a **2WW ENT referral** |
| ***OTHER*** | | |
| Dry Mouth |  | If you are concerned for Sjogren’s syndrome, refer to MaxFax on a routine basis.  Check CRP and autoantibody screen (RhF, ANA specifically Anti Ro (SS A) and Anti la (SS B) antibodies) prior to referral. |
| Follow-up of known conditions | It is the natural history of lipomata to grow slowly over time – a sudden increase in size or pain is concerning and would necessitate **fast track US**. | It is the natural history of many benign conditions (goitre, lipoma) to slowly enlarge and routine US follow-up is not required.  A small, progressive size change is not an indication for F/U. |

**Section 9** **- Musculoskeletal Ultrasound**

Many musculoskeletal pathologies are diagnosed successfully by clinical history and examination. Incidental pathology is common and may not be the current cause of symptoms – clinical correlation is always required.

Pathology may be seen arising from joints, but US cannot exclude intra articular pathology and MRI is a more complete examination if symptoms warrant imaging and suggest joint pathology. Equally, if there is ligament damage on the external surface of a joint, concomitant damage to internal structures cannot be excluded and further cross-sectional imaging is often required.

Joint OA or fracture – whilst this can often be visualised with ultrasound it is usually an incidental finding. X- ray is still the first line imaging modality

## Important Notes:

* There should be a clear working diagnosis and/or clinical question on the request. Given the above caveats, US isan excellent diagnostic modality if a specific question is to be answered.
* Requests that will be returned to the referrer include:
  + Pain ? cause
  + Knee injury ? ACL tear
  + Chest pain ? cause
  + Back pain ? nerve pain ? thigh or leg

Ultrasound examination for some suspected pathologies e.g. impingement/rotator cuff disease, hip for trochanteric bursitis/tendinopathy, elbow for golfer’s or tennis elbow and foot for plantar fasciitis should only be accepted if these patients have been for appropriate clinical assessment and treatment first. Most of these problems will be able to be diagnosed, managed, treated and resolved without the need for imaging - in the cases where conservative management fails, then US may be appropriate.

| **MUSCULOSKELETAL** | | |
| --- | --- | --- |
| **Clinical details** | **US is justified** | **US is NOT justified** |
| Soft tissues – lumps etc | *See section 5 on Superficial Structures* |  |
| Lymph nodes | *See section 6 on Lymph Nodes* |  |
| Tendons - general | Clinical examination indicates:   * Possible Tenosynovitis * Tendinopathy/calcific tendinopathy * rupture   NB: to ensure the ultrasound examination and report is useful, a specific tendon or group of tendons (e.g. rotator cuff) should be indicated in the request | See specific anatomical regions below |
| Joints - general | Swollen joint/suspected effusion and guide aspiration if required.  **Caveat:** effusion may be a cause of swelling but is non-specific. US cannot differentiate between infected and non-infected joint fluid. Patients with clinical signs/symptoms suggestive of septic arthritis should be urgently referred to secondary care. | * US not required if known or suspected diagnosis of OA and effusion expected. * Requests for the investigation of Synovitis/erosions should be directed through **Rheumatology** pathway and not investigated via direct primary care imaging. * Intra-articular pathology including osteoarthritis, loose bodies, Labral or cartilage pathology refer via **MSK/Orthopaedic** pathway. |
| Suspected foreign body | Ultrasound localisation is appropriate especially if injury non acute. Especially good for wood, thorns, pencil lead, plastic | XR best for metal and glass although latter can often be seen on US |
| Shoulder | **Referrals Accepted:**   * ? Rotator cuff tear * Post op cuff failure assessment * Long Head Biceps tendon dislocation   **Referrals requiring discussion:**  Adhesive capsulitis/Frozen shoulder is a clinical diagnosis (ultrasound examination is often unremarkable) Ultrasound may be required to exclude other pathologies. Scan only if clinical concern for alternative pathologies | * Sternoclavicular joint swelling * ? Occult greater tuberosity fracture, should be a secondary care referral for imaging, usually CT or MRI * Glenohumeral joint instability/suspected labral pathology – should be directed to Orthopaedic for clinical assessment/MRI. * Isolated long head Biceps tendon tear is a clinical diagnosis, US not required unless suspicion of additional rotator cuff tear |
| Elbow | * Distal biceps tendon tendinopathy * Recalcitrant Common Extensor Origin (CEO) /Common Flexor Origin (CFO) tendinopathy (tennis/golfers’ elbow) * Bursitis of clinical concern * Ulnar nerve neuropathy/subluxation. To exclude mass at cubital tunnel /medial epicondyle and confirm subluxation. * Medial/Radial nerve symptoms if concern for external compression | * Distal Biceps tendon rupture should be referred urgently to orthopaedics as prompt treatment required. MRI is modality of choice * US cannot accurately assess for focal neuritis. |
| Wrist/Hand | * Tendon rupture * Tenosynovitis * Tendinopathy * Pulley/sagittal band injury/ruptures * Median nerve: Indicated to look for carpal tunnel mass only. May detect neuritis, but Carpal Tunnel Syndrome is not an ultrasound diagnosis. * Ulnar nerve compression: To exclude mass causing compression of ulnar nerve. | * Suspected thumb/finger collateral ligament injuries should be referred to secondary care as prompt treatment is vital. * ? Triangular fibrocartilage complex (TFCC) tear should be a secondary care referral and MRI is modality of choice. * TFCC calcification can be adequately assessed on Plain Film X-Ray |
| Hip | * Effusion (with the caveat that effusion may be a cause of swelling but is non-specific – see note above in ‘Joints - general’ about infection) * High grade muscle injuries ie Adductor tear. * Gluteal tendinopathy/tear. Trochanteric pain – US can be used to guide injection but cannot definitively exclude trochanteric bursitis. * Palpable lateral hip/upper thigh swelling * ? Greater trochanteric bursal effusion | * Hip pain ? cause * Hip pain ?OA – XR required |
| Knee | * Suprapatellar/infrapatellar/pre patellar bursitis * Patellar tendon: * tendinopathy/ tear /calcification * Quadriceps tendon: * tendinopathy/tear/calcification * Baker’s cyst if symptomatic or uncertain about diagnosis | * ? Osteochondritis/osteoarthritis - XR * Ligament instability. Ligaments can be seen, however patients with potential instability may need referral to a specific orthopaedic pathway for assessment +/- MRI * Baker’s cyst scan is not required unless there is uncertainty about diagnosis |
| Ankle/Foot | * Medial/lateral/anterior tendons: * Tear, tendinopathy, tenosynovitis, or subluxation * Achilles: * Tear, tendinopathy, calcification * Retrocalcaneal/pre-Achilles bursitis * Plantar fascia: * Acute tear, recalcitrant fasciitis, fibroma * Morton’s neuroma * Plantar plate disruption (usually a secondary care or other specialist referral) | * Assessment of: * Anterior talofibular ligament * Calcaneofibular ligament * Posterior talofibular ligament * Deltoid ligament * Anterior/mid lateral ligaments can be seen, however patients with potential ankle instability may need referral to a specific Orthopeadic pathway for assessment +/- MRI. |

## References and Further Reading

**Applicable to all sections**

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